Mumbai University

Question Paper

[CBSGS – 75:25 Pattern] (April – 2016)

PAPER - IV

ELECTIVE

Geographic Information System

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: (1) *All Question are Compulsory.*
   (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
   (3) *Answer To The Same Question Must Be Written Together.*
   (4) *Number To The Right Indicates Marks.*
   (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
   (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List various GIS operations. Explain any two of them.   **(5)**
(B)   Convert the following into degrees: **(5)**
   (i) *45o 15' 45"*
   (ii) *1745 rad*
(C)   Explain with suitable example Coverage Data Structure.   **(5)**
(D)   Explain the data structure used in the geodatabase data model.   **(5)**

Q.2   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List various data sources that can be used to create new geospatial data. Explain any one.   **(5)**
(B)   Explain the Neutral-format data exchange with suitable example.   **(5)**
(C)   Define: **(5)**
   (i) *Digitizing*
   (ii) *Vectorization*
   (iii) *Resampling*
   (iv) *RMS*
   (v) *Scanning*
(D)   Explain Affine transformation.   **(5)**

Q.3   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is attribute data in GIS? List and explain different types of the attribute table.   **(5)**
(B)   List different types of database design. Explain any two.   **(5)**
(C)   Write a short note on map production.   **(5)**
(D)   List and explain different types of maps.   **(5)**

Q.4   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   What is descriptive statistics? Explain.   **(5)**
(B)   Explain spatial aggregation.   **(5)**
(C)   What is the output of the following for a statement (slope = 1) AND (NOT(Aspect =3))?   **(5)**
(D)   Explain with suitable example: Spatial Data Query.   **(5)**

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List and explain various overlay operations based on feature type.   **(5)**
(B)   What do you mean by pattern analysis? Explain Nearest Neighbour Analysis.   **(5)**
(C)   What is a local operation? Explain local operation with a single raster.   **(5)**
(D)   Explain the neighbourhood operations with suitable example.   **(5)**

[TURN OVER]

Q.6   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Explain the Thin-Plate Splines Local Method.   **(5)**

(B)   Explain the Thin-Plate Splines Local Method.   **(5)**

(C)   What is Kriging? Explain Universal Kriging.   **(5)**

(D)   List and explain the elements of Spatial Interpolation.   **(5)**

Q.7   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   Consider the following information on a 30-meter DEM: **(5)**
  - *UTM coordinates in the lower left corner 560635, 4816399.*
  - *UTM coordinates in meters at the upper right corner 570595, 4830380.*

  How many rows and columns does the DEM have?

  What are the UTM coordinates at the center of the cell(row 1, column 1)?

(B)   Write a short note on metadata.   **(5)**

(C)   Explain the different commonly used data classification methods.   **(5)**

(D)   Explain feature selection by spatial relationship data query with suitable example.   **(5)**

(E)   Explain the following map manipulation operations with example: **(5)**
  (i)   *Dissolve*
  (ii)   *Append*

(F)   Write a short note on Density Estimation.   **(5)**